DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 13.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-011835
Date Inspected: 01-Feb-2010

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Oregon Iron Works Clackamas, Or.

OSM Arrival Time: 1000
OSM Departure Time: 1830
Location: Clackamas, OR

CWI Name: M. Gregson, J. Salazar, G. Mundt

CWI Present:	☑ Yes	☐ No		**Inspected CWI report:**	☐ Yes	☑ No	☐ N/A
Rod Oven in Use:	☐ Yes	☐ No	☑ N/A	**Electrode to specification:**	☑ Yes	☐ No	☐ N/A
Weld Procedures Followed:	☑ Yes	☐ No	☐ N/A	**Qualified Welders:**	☑ Yes	☐ No	☐ N/A
Verified Joint Fit-up:	☑ Yes	☐ No	☐ N/A	**Approved Drawings:**	☑ Yes	☐ No	☐ N/A
Approved WPS:	☑ Yes	☐ No	☐ N/A				
Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A				

Bridge No: 34-0006
Component: Hinge K Pipe Beams

Summary of Items Observed:

The Quality Assurance Inspector Sean Vance arrived on site at Oregon Iron Works, Inc (OIW) in Clackamas, OR, to randomly observe the in process welding of the Hinge K Pipe Beam assemblies. The QA Inspector arrived on site to randomly observe the OIW Quality Control (QC) Inspectors in process and completed visual and nondestructive testing. Upon the arrival of the QA Inspector the following observations were made:

AG Machining (Boring,OR)

On this date, the QA Inspector arrived at AG Machine to observe OIW perform informal penetrant testing and weld repairs, on the finished overlay surface, on this Fuse 120A-5. The QA Inspector met with OIW QC Inspector Jose Salazar, OIW welder (WID# C34) Mark Craig an OIW and AG Machinist. QC Inspector Salazar explained to the QA Inspector that he was instructed to perform informal PT on 100% of the overlay and Mr. Craig will perform the GTAW weld repairs. The QA Inspector noted that the indications, currently present in the overlay, appeared after AG completed the final cut pass and finish honing. QC Inspector Salazar informed the QA Inspector that per the approved OIW Liquid Penetrant testing (PT) procedure QC-114 the piece to be examined should be at a minimum of 70 degrees Fahrenheit. For this inspection OIW are attempting to locate any discrepancy that would need to be repaired prior to final inspection. Once all repairs are complete, OIW will later perform a formal PT inspection on 100% of the Fuse overlay per the approved PT procedure. The QA Inspector witnessed QC Inspector Jose Salazar in process of cleaning “sections” on the overlay with acetone/cleaner and also later applying penetrant and developer. The QA Inspector spoke with Mr. Salazar who explained that any surface indications that were present during the informational PT testing would be marked for repairing and OIW welder Mark Craig would then grind out and perform GTAW on the repairs. QC Inspector Salazar informed the QA Inspector that multiple indications were present, during the PT testing, which appeared to be small clusters of

slag inclusions. The QA Inspector witnessed Mr. Craig grinding out these indications, to a depth of .5-1 mm and then later setting up to perform the GTAW.
The QA Inspector noted that Mr. Craig was currently qualified to perform these repairs and would be utilizing welding procedure specification (WPS 8022). The QA Inspector witnessed Mr. Craig performing the pre-heat required, utilizing a torch and then observed a temperature of approximately 150 degrees Fahrenheit, after the pre-heat was complete. The QA Inspector noted that 125 degrees Fahrenheit minimum was required, per WPS 8022. The QA Inspector witnessed AG Machinist rotating the fuse assembly to access the weld repair areas in the flat position. The QA Inspector then observed Mr. Mark Craig performing the GTAW on the previously excavated repair areas. The QA Inspector also observed QC Inspector Jose Salazar recording the in-process welding parameters of 121 amps and 16.5 volts. The QA Inspector also verified these welding parameters. The QA Inspector noted that after completion of these weld repair areas,the OIW Machinist performed the grinding with a buffer wheel on the completed weld repair to "flush" with the finished overlay surface. The QA Inspector observed that the Fuse was then rotated and the QC Inspector performed 100% informational PT Inspection on another section of the finished overlay. The QA Inspector also observed several more indications that would need to go through the above mentioned repair procedure. The QA Inspector observed that Mr. Salazar was present the entire time in which the GTAW welding was being performed.
The QA Inspector later spoke with QC Inspector Salazar and Mr. Salazar explained that the informational PT testing was complete and there were a total of 12 GTAW repair spots. See attached pictures below.

OIW Fabrication Shop-Bay 6 (ESW Overlay Process)
Hinge-K Pipe Beam Fuse Assembly 120A-8
The QA Inspector was present on this swing shift and witnessed WID#V7, Mr. Vincent Vue continuing to perform electro slag welding (ESW) on the third layer ESW welding passes, utilizing the 316L stainless steel consumable strip, in the flat position. The QA Inspector randomly noticed QC Inspector Gary Mundt was present, to verify in-process welding parameters (amps/volts) and monitor in-process continuous pre-heat temperatures. QC Inspector Mundt explained to the QA Inspector that welding amperage was previously recorded at 1300 amps/25 volts, travel speed of 267mm/min. and a pre-heat temperature recorded at 150 degrees Fahrenheit (66C). The QA Inspector randomly verified pre-heat temperature of approximately 150 degrees Fahrenheit (66 C) and noted that the ESW being performed, appeared to be in compliance with the applicable welding procedure specification (WPS) 7003. See attached picture below.

Hinge-K Pipe Beam Assembly 102A-3
a111-3 Forging to a110-3 Base Plate
The QA Inspector was notified by OIW swing shift QC Inspector Gary Mundt that WID #B10 (Liem Bui), was in process of setting up, to perform Critical Weld Repairs #2244-021 and #2244-014. QC Inspector Mundt explained that the FCAW will be performed to the OIW approved Welding Procedure Specification (WPS) 3051. QC Mundt explained that he will be present during the entire shift to continuously monitor welding parameters (amps/volts) and pre-heat temperatures, during the CWR's. QC Inspector Mundt explained that WID #B10 currently has a copy of the approved WPS and the QA Inspector verified this. See attached picture below.

Material, Equipment, and Labor Tracking (MELT)
QA Inspector Sean Vance performed a verification of material, personnel and equipment involved with the project.
The QA Inspector observed at Oregon Iron Works: 3 OIW production personnel and 2 QC Inspectors.
The QA Inspector observed at AG Machine shop. 1 AG Machinist 1 OIW Machinist, 1 OIW Welder and 1 OIW

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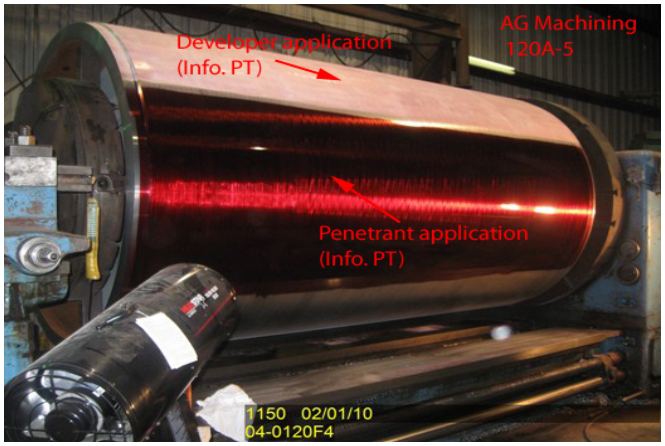
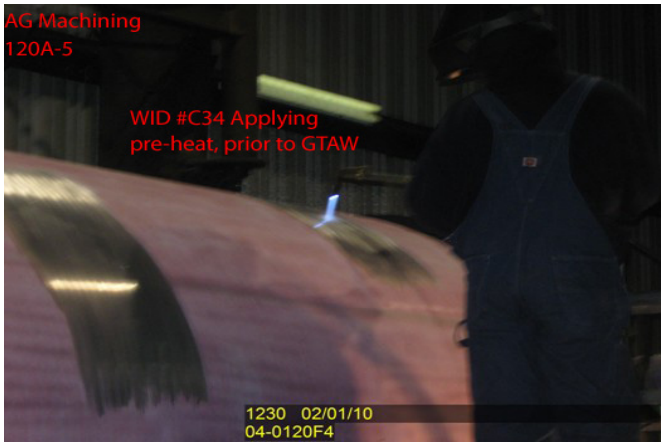
QC.





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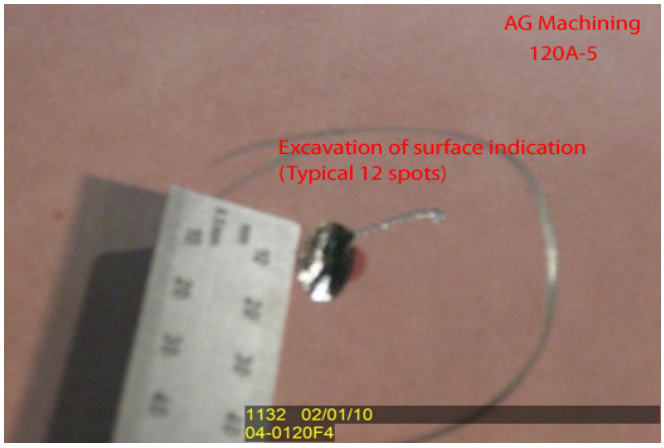

Summary of Conversations:

As noted above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

Inspected By:	Vance,Sean	Quality Assurance Inspector
Reviewed By:	Adame,Joe	QA Reviewer